

NOV 29 2006

Application No.: 10/554,964

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Docket No.: 480052000900

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A catheter for a medical apparatus, comprising:  
an inner catheter (100) ~~having a distal end and a proximal end;~~ and  
a sheath (202) ~~of polymer material, having a distal end and a proximal end,~~ disposed around at least a portion of the inner catheter, ~~said the~~ sheath being retractable in a proximal direction relative to the inner catheter, the inner catheter configured to resist a radially inward contraction of the sheath arising from to perform an actuating step at the distal end of the system, by the application of an endwise tensile stress to the a proximal end of the sheath, ~~characterized in that:~~  
~~the inner catheter resists the associated radially inward contraction of the sheath which arises from the applied tensile stress during said actuating step.~~
2. (Currently Amended) The catheter according to ~~Catheter as claimed in~~ claim 1, ~~and~~ including a lubricious coating (132) on the an outer surface of the inner catheter.
3. (Currently Amended) The catheter according to ~~Catheter as claimed in~~ claim 1 ~~or 2,~~ including with a lubricious fluid (132) in the annulus between the sheath and the inner catheter.
4. (Currently Amended) The catheter according to claim 1, ~~Catheter as claimed in any one of the preceding claims~~ wherein the sheath is ~~made from~~ comprises a thermoplastic elastomeric material.

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5. (Currently Amended) ~~Catheter of any preceding claim~~ The catheter according to claim 1, wherein the inner catheter comprises:

a wire coil (110) having a lumen, a distal end, a proximal end, a distal region (114), an intermediate region and a proximal region (112);  
and

an outer tube (124) disposed around at least a portion of the wire coil,  
~~having a distal end and a proximal end.~~

6. (Currently Amended) ~~Catheter of~~ The catheter according to claim 5, in ~~which~~ wherein the inner catheter includes an inner tube (102) ~~radially within~~ in the wire coil lumen.

7. (Currently Amended) ~~Catheter of~~ The catheter according to claim 6, wherein the distal end of the inner tube extends to a point distal of the distal end of the wire coil.

8. (Currently Amended) ~~Catheter as claimed in~~ The catheter according to claim 6 or 7, wherein the inner tube defines an inner guidewire lumen (104) ~~for the insertion and retraction of a guide wire therethrough.~~

9. (Currently Amended) ~~Catheter as claimed in any one of claims 5 to 8~~ The catheter according to claim 5, wherein the wire coil has a closed-coil structure in the intermediate region and an open-coil structure in at least one of the distal region and the proximal region.

10. (Currently Amended) ~~Catheter of~~ The catheter according to claim 9, wherein the wire coil has an open-coil structure in both the distal region and the proximal region.

11. (Currently Amended) ~~Catheter as claimed in any one of claims 5 to 10~~ The catheter according to claim 6, in ~~which~~ wherein the wire coil defines a liquid flow path from the proximal end to the distal end of the system ~~which includes catheter, including~~ a radially-extending portion through said the open-coil structure, ~~for transferring liquid from the proximal end to the distal end of the coil.~~

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12. (Currently Amended) ~~Catheter as claimed in~~ The catheter according to claim 11, wherein the liquid flow path is an annular flow path bounded ~~inside~~ by the inner tube and ~~outside~~ by the wire coil, ~~for transferring liquid from the proximal end to the distal end of the~~ coil.

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20. (Currently Amended) ~~A medical device delivery apparatus, having a distal end and a proximal end, comprising:~~

~~a catheter as claimed in any one of claims 5 to 19~~ The catheter according to claim 5, [[:]] including an actuating means (150, 250) device connected to a proximal end of the inner catheter and to the sheath for retracting, configured to retract the sheath in a proximal direction relative to the inner catheter.

21. (Currently Amended) ~~The medical device delivery apparatus of The catheter according to claim 20, and carrying including a medical device (300) for deployment in a bodily lumen, the medical device being maintained in position between the sheath and the inner catheter, and the medical device being releasable by [[a]] retraction of the sheath in a proximal direction relative to the inner catheter.~~

22. (Currently Amended) ~~The medical device delivery apparatus of The catheter according to claim 21, wherein:~~

the medical device is held within the lumen of the ~~outer~~ sheath at a location distal of the distal end of the wire coil;

the medical device is maintained radially compressed in a first state by the sheath being disposed around at least a portion of the medical device;

during retraction of the sheath, the medical device is prevented by the wire coil from moving with the sheath in a proximal direction; and

when the sheath is retracted in a proximal direction relative to the inner catheter, the medical device is released for expansion to a radially less compressed state.

23. (Currently Amended) ~~The medical device delivery apparatus of The catheter according to claim 21 or 22, wherein the medical device is a self-expanding stent.~~

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24. (New) A medical device delivery apparatus, comprising:  
a catheter, including an inner catheter and a sheath, the inner catheter including an inner polymeric tube, a wire coil disposed about a portion of the inner tube, and an annular gap between the inner polymeric tube and wire coil, the wire coil including an open-coil structure in at least one of a proximal region and a distal region and a closed-coil structure in an intermediate region, the sheath disposed about the inner catheter; and  
an actuating device connected to the catheter.
25. (New) The medical device delivery apparatus according to claim 24, wherein the catheter further includes an outer tube disposed about the wire coil.
26. (New) The medical device delivery apparatus according to claim 25, wherein the outer tube comprises polytetrafluoroethylene and is disposed tightly about the intermediate region of the wire coil.
27. (New) The medical device delivery apparatus according to claim 25, wherein the outer tube comprises polytetrafluoroethylene, and wherein a silicone coating is disposed over a surface of the outer tube.
28. (New) The medical device delivery apparatus according to claim 27, wherein the sheath comprises a thermoplastic elastomer and is in contact with the silicone coating.
29. (New) The medical device delivery apparatus according to claim 24, wherein a distal end of the wire coil is joined to a pusher element disposed about a distal region of the inner tube.
30. (New) The medical device delivery apparatus according to claim 29, wherein the pusher element includes a shoulder, a stent bed being defined along a distal region of the inner tube between the shoulder and a distal end of the inner tube.

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31. (New) The medical device delivery apparatus according to claim 30, further comprising a tip attached to the distal end of the inner tube, a distal end of the sheath abutting the tip in a delivery apparatus insertion position.

32. (New) The medical device delivery apparatus according to claim 24, including a push rod disposed about the inner tube at a proximal region thereof, a distal end of the push rod joined to a proximal end of the wire coil.

33. (New) The medical device delivery apparatus according to claim 24, wherein a radiopaque marker band is attached to an inner surface of a distal end of the sheath.

34. (New) The medical device delivery apparatus according to claim 24, wherein the actuating device includes a first member connected to the inner catheter, and a second member connected to the sheath, the second member including a locking member configured to prevent relative movement between the inner catheter and the sheath.

35. (New) The medical device delivery apparatus according to claim 34, wherein an open position of the actuating device includes the first member spaced apart from the second member, and wherein a closed position of the actuating device includes the first member adjacent to the second member.

36. (New) The medical device delivery apparatus according to claim 34, wherein the second member includes a luer member in fluid communication with the inner catheter.

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